

(h) *Tensile strength and the ultimate elongation*—(1) *Specimens*. The test specimens shall be dumbbell shaped, conforming in shape to die I of method 4111 of Standard FED-STD-601. The thickness of the specimen shall be $\frac{1}{4}$ inch. Two specimens shall be taken from the center of the sample piece and two from one side, keeping the skin surface intact. The thickness shall be measured to the nearest 0.001 inch by a suitable measurement device such as a vernier caliper with a sliding vernier to read 0.001 inch. Care shall be taken not to compress or distort the specimen when measuring. The specimens taken from the center will be skinless; the others will have skin on one side. One-inch bench marks shall be placed midway on the constricted portion of the tensile specimen.

(2) *Procedure*. (i) The tensile strength of the specimens shall be determined in a standard tensile testing machine with a rate of separation of jaws set at 2 inches per minute. The bench marks shall be followed with a suitable pair of dividers until the specimen ruptures. A minimum of 4 specimens shall be tested and if any specimen breaks at the clamp or any specimen exhibits any obvious defects, the results obtained therewith shall be discarded. A new similar specimen shall then be prepared and tested. The tensile strength shall be calculated by dividing the breaking load (to the nearest 0.1 pound) by the original area of the cross section of the specimen in square inches and the result shall be expressed in pounds per square inch. The percent ultimate elongation shall be calculated as follows:

$$D_1 - D \div D \times 100 \quad (2)$$

where:

D = distance between knife edges of bench marker.

D₁ = distance between bench marks at moment of rupture to the nearest $\frac{1}{32}$ inch.

(3) *Averaging determinations*. The tensile strength in pounds per square inch and percent ultimate elongation of four determinations shall be averaged for each sample.

(i) *Water absorption*—(1) *Specimens*. Test specimens shall be 4"x4" square and approximately 1" in thickness. The

specimen may have the natural skin on the top and bottom surfaces.

(2) *Procedure*. The specimens shall be weighed and submerged in water under a 10-foot head of water (equal to 4.35 psi) at room temperature (65°-95 °F.) for 48 hours. The specimens shall then be placed in a stream of air for the minimum time required to remove visible water from the surface, and reweighed. The results shall be calculated in terms of pounds of water gain per square foot of total exposed surface.

(j) *Flexibility*—(1) The size of the specimen shall be approximately 1'x8' with a thickness of $\frac{1}{4}' \pm \frac{1}{16}"$. The test specimens and equipment shall be conditioned for at least 4 hours at 0 °F. ± 2 °F., and bent 180° around a $\frac{1}{2}"$ diameter steel mandril within 5 seconds at the test temperature. Care shall be taken to avoid warming the test specimens, particularly at or near the bend point, in performing the test.

(k) *Oil resistance*—(1) *Specimens*. The test specimens shall be a disk approximately 1" in diameter and 1" (approximately) in thickness.

(2) *Procedure*. The specimen shall be immersed in fuel oil conforming to Navy special grade of Specification MIL-F-859 for 70 hours. The specimen shall then be removed, dipped in alcohol and blotted with filter paper. The specimen shall then be compared to an untreated specimen of similar size for apparent softness and visible swelling.

(l) *Odor*. The odor of unicellular polyvinyl chloride foam shall be determined by sniffing.

[CGFR 65-37, 30 FR 11593, Sept. 10, 1965, as amended by CGFR 65-64, 31 FR 563, Jan. 18, 1966]

§ 164.015-5 Procedure for acceptance.

(a) Unicellular plastic foam is not subject to formal approval, but will be accepted by the Coast Guard on the basis of this subpart for use in the manufacture of lifesaving equipment utilizing it.

(b) Upon receipt of an application requesting acceptance, the Commander of the Coast Guard District will detail a marine inspector to the factory to observe the production facilities and manufacturing methods and to select

from foam already manufactured sufficient sample material for testing for compliance with the requirements of this specification. A copy of the marine inspector's report, together with the sample material and one copy of an independent laboratory test report will be forwarded to the Commandant and if satisfactory notice of acceptance will be given to the manufacturer.

(c) Acceptance of unicellular plastic foam prior to being incorporated into finished products, or during the course of manufacture, shall in no case be construed as a guarantee of the acceptance of the finished products.

(d) The manufacturer of the foam shall provide the manufacturer of the lifesaving equipment with an affidavit certifying that the foam conforms to all of the requirements of this subpart.

Subpart 164.018—Retroreflective Material for Lifesaving Equipment

SOURCE: CGD 76-028, 44 FR 38786, July 2, 1979, unless otherwise noted.

§ 164.018-1 Scope.

This subpart prescribes design requirements, approval tests, and procedures for approving retroreflective material used on lifesaving equipment.

§ 164.018-3 Classification.

The following types of retroreflective material are approved under this specification:

(a) Type I—Material used on flexible surfaces and rigid surfaces, except rigid surfaces that are continuously exposed.

(b) Type II—Weather resistant material used on continuously exposed rigid surfaces.

§ 164.018-5 Specifications and standards incorporated by reference.

(a) The following federal and military specifications and standards are incorporated by reference into this subpart:

(1) Federal Specification L-P-375 C (April 23, 1970), entitled "Plastic Film, Flexible, Vinyl Chloride", as amended by Amendment 2 of December 2, 1976.

(2) Federal Specification L-S-300 B (July 12, 1974), entitled "Sheeting and Tape, Reflective: Nonexposed Lens, Adhesive Backing."

(3) Federal Specification CCC-C-426 D (August 12, 1970), entitled "Cloth, Drill, Cotton."

(4) Federal Specification CCC-C-443 E (December 2, 1974), entitled "Cloth, Duck, Cotton (Single and Plied Filling Yarns, Flat)."

(5) Federal Test Method Standard 141a (September 1, 1965), entitled "Paint, Varnish, Lacquer and Related Materials; Methods of Inspection, Sampling and Testing." (Method 6141 "Washability of Paints", and Method 6142 "Scrub Resistance" as amended May 1, 1974).

(6) Federal Test Method Standard 370 (March 1, 1977), entitled "Instrumental Photometric Measurements of Retroreflective Materials and Retroreflective Devices."

(7) Military Specification MIL-C-17415 E (April 16, 1964), entitled "Cloth, Coated, and Webbing, Inflatable Boat and Miscellaneous Use", as amended by Amendment 5 of April 26, 1976.

(8) Military Specification MIL-R-21607 D (August 5, 1976), entitled "Resins, Polyester, Low Pressure Laminating, Fire-retardant."

(9) Military Specification MIL-C-43006 E (March 24, 1978), entitled "Cloth and Strip Laminated, Vinyl Nylon High Strength, Flexible."

(b) Federal and military specifications and standards may be obtained from Customer Service, Naval Publications, Forms Center, 5801 Tabor Ave., Philadelphia, Pa. 19120. These materials are also on file in the Federal Register library.

(c) Approval to incorporate by reference the materials listed in this section was obtained from the Director of the Federal Register on June 14, 1979.

(d) When changes are made to a specification or standard incorporated by reference into this subpart, the effective date for its use will be the effective date set by the issuing authority unless otherwise determined by the Coast Guard.

§ 164.018-7 Approval procedures.

(a) An application for approval of retroreflective material must be sent to the Commandant (G-MSE), U.S. Coast Guard, Washington, DC 20593-0001.